

What is Claimed is:

1. A pressure sensitive adhesive fiber comprising:
a pressure sensitive adhesive component; and
a minimicrofibrous organic polymeric reinforcing material within the
5 pressure sensitive adhesive component;
wherein a nonwoven web comprising the pressure sensitive adhesive
fiber and having a basis weight of about 55 g/m² has a maximum load of at least
about 30 g/cm, which is at least about 150% of the load at yield point, and an
elongation at break of at least about 50%.
10
2. The pressure sensitive adhesive fiber of claim 1 wherein the
minimicrofibrous organic polymeric reinforcing material comprises substantially
continuous minimicrofibers.
- 15 3. The pressure sensitive adhesive fiber of claim 1 wherein the nonwoven
web comprising the pressure sensitive adhesive fiber has an elongation at break
of at least about 200% at a basis weight of about 55 g/m².
4. The pressure sensitive adhesive fiber of claim 1 wherein the nonwoven
20 web comprising the pressure sensitive adhesive fiber has a maximum load of at
least about 50 g/cm at a basis weight of about 55 g/m².
5. The pressure sensitive adhesive fiber of claim 1 wherein the nonwoven
web comprising the pressure sensitive adhesive fiber has a load at yield point of
25 no greater than about 100 g/cm at a basis weight of about 55 g/m².
6. The pressure sensitive adhesive fiber of claim 1 comprising about 60
weight percent to about 95 weight percent of the pressure sensitive adhesive
component and about 5 weight percent to about 40 weight percent of
30 minimicrofibrous organic polymeric reinforcing material.

7. The pressure sensitive adhesive fiber of claim 1 wherein the minimicrofibrous organic polymeric reinforcing material comprises at least one minimicrofiber having a diameter of no greater than about 5 micrometers.
- 5 8. The pressure sensitive adhesive fiber of claim 1 wherein the minimicrofibrous organic polymeric reinforcing material comprises at least one minimicrofiber having an aspect ratio of greater than about 1000.
- 10 9. The pressure sensitive adhesive fiber of claim 1 wherein the pressure sensitive adhesive component comprises synthetic rubber, styrene block copolymer, polyvinyl ether, poly(meth)acrylate, polyolefin, silicone, or combinations thereof.
- 15 10. The pressure sensitive adhesive fiber of claim 1 wherein the pressure sensitive adhesive component comprises a crosslinked acrylate copolymer, wherein the crosslinked acrylate copolymer comprises copolymerized monomers comprising at least one monoethylenically unsaturated alkyl (meth)acrylate monomer, at least one monoethylenically unsaturated free-radically copolymerizable reinforcing monomer having a homopolymer glass transition
- 20 temperature higher than that of the alkyl (meth)acrylate monomer.
11. The pressure sensitive adhesive fiber of claim 10 wherein the crosslinked acrylate copolymer is derived from a melt-processable acrylate copolymer and a crosslinking agent, wherein the crosslinking agent crosslinks subsequent to fiber
- 25 formation or is a thermally reversible crosslinking agent.
12. The pressure sensitive adhesive fiber of claim 11 wherein the crosslinking agent is a styrene macromer.
- 30 13. The pressure sensitive adhesive fiber of claim 10 wherein the alkyl (meth)acrylate monomer when homopolymerized has a glass transition temperature of no greater than about 0°C, and wherein the free-radically

copolymerizable reinforcing monomer when homopolymerized has a glass transition temperature of at least about 10°C.

14. The pressure sensitive adhesive fiber of claim 10 wherein the pressure sensitive adhesive component comprises a polymer derived from at least one alkyl (meth)acrylate ester monomer selected from isooctyl acrylate, 2-ethylhexyl acrylate, and n-butyl acrylate, and at least one monomer selected from acrylic acid and acrylamide.

15. The pressure sensitive adhesive fiber of claim 1 wherein the minimicrofibrous organic polymeric reinforcing material comprises an elastomer having a yield strength of no greater than about 20 MPa and a tensile strength of at least about 150% of the yield strength.

16. The pressure sensitive adhesive fiber of claim 1 wherein the minimicrofibrous organic polymeric reinforcing material comprises a semi-crystalline polymer.

17. A pressure sensitive adhesive fiber comprising:
a pressure sensitive adhesive component; and
a reinforcing material comprising a metallocene-catalyzed polyolefin within the pressure sensitive adhesive component;
wherein a nonwoven web comprising the pressure sensitive adhesive fiber and having a basis weight of about 55 g/m² has a maximum load of at least about 30 g/cm, which is at least about 150% of the load at yield point, and an elongation at break of at least about 50%.

18. The pressure sensitive adhesive fiber of claim 17 wherein the reinforcing material is in the form of one or more fibers or one or more layers.

19. A pressure sensitive adhesive fiber comprising:
a pressure sensitive adhesive component comprising a crosslinked acrylate copolymer, wherein the crosslinked acrylate copolymer comprises copolymerized monomers comprising at least one monoethylenically unsaturated

alkyl (meth)acrylate monomer, at least one monoethylenically unsaturated free-radically copolymerizable reinforcing monomer having a homopolymer glass transition temperature higher than that of the alkyl (meth)acrylate monomer; and

5 a reinforcing material comprising a metallocene-catalyzed polyolefin within the pressure sensitive adhesive component;

wherein a nonwoven web comprising the pressure sensitive adhesive fiber and having a basis weight of about 55 g/m² has a maximum load of at least about 30 g/cm, which is at least about 150% of the load at yield point, and an elongation at break of at least about 50%.

10

20. A pressure sensitive adhesive fiber comprising:

a pressure sensitive adhesive component; and

an organic polymeric reinforcing material within the pressure sensitive adhesive component, wherein the organic polymeric reinforcing material has a yield strength of no greater than about 20 MPa and an elongation at break of at least about 50%;

15 wherein a nonwoven web comprising the pressure sensitive adhesive fiber and having a basis weight of about 55 g/m² has a maximum load of at least about 30 g/cm, which is at least about 150% of the load at yield point, and an elongation at break of at least about 50%.

20

21. A method for making a minimicrofibrous reinforced adhesive fiber, the method comprising:

forming a molten mixture comprising a pressure sensitive adhesive with a reinforcing material capable of forming minimicrofibers when subjected to a shear force and/or an extensional force;

25

subjecting the molten mixture to a shear force and/or extensional force to form a pressure sensitive adhesive fiber of claim 1; and quenching the pressure sensitive adhesive fiber.

30

22. A nonwoven web comprising the pressure sensitive adhesive fiber of claim 1.

23. A nonwoven web comprising the pressure sensitive adhesive fiber of claim 17.
- 5 24. A nonwoven web comprising the pressure sensitive adhesive fiber of claim 19.
25. A nonwoven web comprising the pressure sensitive adhesive fiber of claim 20.
- 10 26. A substrate comprising at least one surface having a nonwoven web of the pressure sensitive adhesive fiber of claim 1 disposed thereon.
27. The substrate of claim 26 which is a release liner.
- 15 28. The substrate of claim 26 which is an extensible nonwoven web comprising fibers having at least two substantially continuous layers throughout the fiber length, wherein the layers comprise at least one first layer of a low modulus material and at least one second layer of a relatively nonelastic higher modulus material capable of undergoing substantial permanent deformation.
- 20 29. The substrate of claim 28 wherein the layers are concentric.
30. The substrate of claim 28 wherein the layers are longitudinally layered.
- 25 31. The substrate of claim 28 wherein each fiber comprises an outer sheath layer comprising the at least one first layer and at least one internal core layer comprising the at least one second layer.
- 30 32. The substrate of claim 31 wherein the outer sheath layer comprises a polyurethane.
33. A substrate comprising at least one surface having a nonwoven web of the pressure sensitive adhesive fiber of claim 17 disposed thereon.

34. A substrate comprising at least one surface having a nonwoven web of the pressure sensitive adhesive fiber of claim 19 disposed thereon.
35. A substrate comprising at least one surface having a nonwoven web of the pressure sensitive adhesive fiber of claim 20 disposed thereon.
36. A tape comprising
a backing having a first and second side; and
a nonwoven web comprising the pressure sensitive adhesive fiber of claim 1 disposed on at least a portion of the first side of the backing and, optionally, on at least a portion of the second side of the backing.
37. A tape comprising
a backing having a first and second side; and
a nonwoven web comprising the pressure sensitive adhesive fiber of claim 17 disposed on at least a portion of the first side of the backing and, optionally, on at least a portion of the second side of the backing.
38. A tape comprising:
a backing having a first and second side; and
a nonwoven web comprising the pressure sensitive adhesive fiber of claim 19 disposed on at least a portion of the first side of the backing and, optionally, on at least a portion of the second side of the backing.
39. A tape comprising:
a backing having a first and second side; and
a nonwoven web comprising the pressure sensitive adhesive fiber of claim 20 disposed on at least a portion of the first side of the backing and, optionally, on at least a portion of the second side of the backing.
40. A stretch removable article comprising the pressure sensitive adhesive fiber of claim 1.

41. A stretch removable article comprising the pressure sensitive adhesive fiber of claim 17.

5 42. A stretch removable article comprising the pressure sensitive adhesive fiber of claim 19.

43. A stretch removable article comprising the pressure sensitive adhesive fiber of claim 20.

10 44. A medical article comprising the pressure sensitive adhesive fiber of claim 1.

15 45. The medical article of claim 44 which is in the form of a wound dressing, surgical dressing, medical tape, athletic tape, or surgical tape.

46. The medical article of claim 44 which is in the form of a sensor, an electrode, or an ostomy appliance.

20 47. A medical article comprising the pressure sensitive adhesive fiber of claim 17.

48. A medical article comprising the pressure sensitive adhesive fiber of claim 19.

25 49. A medical article comprising the pressure sensitive adhesive fiber of claim 20.